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EXAMINER	
HUYNH, CONG LAC T	
ART UNIT	**PAPER NUMBER**
2178	26

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/163,848	PEAIRS ET AL.	
	Examiner	Art Unit	
	Cong-Lac Huynh	2178	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30 and 32* is/are pending in the application.

4a) Of the above claim(s)_____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to communications: amendment filed 12/1/03 to the application filed on 09/30/98.

2. Claim 31 is canceled.

3. Claims 1-30, 32 are pending in the case. Claims 1, 9, 13, 19, 24, 29 are independent claims.

4. The rejections of claims 1-3, 5, 7-9, 11, 13-28 under 35 U.S.C. 103(a) as being unpatentable over Snow in view of Lee and Jamali have been withdrawn in view of the amendment.

5. The rejections of claims 4 and 10 under 35 U.S.C. 103(a) as being unpatentable over Snow in view of Lee and Jamali and further in view of Morita have been withdrawn in view of the amendment.

6. The rejections of claims 6 and 12 under 35 U.S.C. 103(a) as being unpatentable over Snow in view of Lee and Jamali and further in view of Tim Ho have been withdrawn in view of the amendment.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102((e), f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-3, 5, 7-9, 11, 13-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faisal et al. (US Pat No. 6,094,652, 7/25/00, filed 6/10/98) in view of Lee (US Pat No. 5,841,905, 11/24/98, filed 10/25/96) and Jamali (US Pat No. 6,243,501 B1, 6/5/01, filed 5/20/98).

Regarding independent claim 1, Faisal discloses:

- analyzing content of the documents within a database to determine a plurality of document classes within the database (col 4, lines 1-25, col 14, lines 1-25 and figure 7: analyzing contents of the documents within a database to determine one or more categories for the documents)
- determining a document classification profile based on the plurality of document classes (col 4, lines 1-25: analyzing documents to provide a rich and comprehensive thematic profile and classification of the documents)

Faisal does not disclose:

- generating a classification of the document based on the textual profile and the graphical profile
- analyzing textual content and graphical content of a previously unclassified electronic document to determined a textual profile and a graphical profile of the electronic document
- using a first directory structure mirroring a second directory structure used by a user for storing documents
- storing the electronic document in one or more directories within a first directory structure based on the classification of the document and the document classification profile associated with the first directory structure

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Faisal to include "using a first directory structure mirroring a second directory structure used by a user for storing documents" and "storing the electronic document in one or more directories within a first directory structure based on the classification of the document and the classification profile associated with the first directory structure" for the following reason. The fact that the categories provided by analyzing document contents for classifying documents in Faisal suggests storing the documents in a directory based on said categories after being classified. Also, it was well known to *copy one directory structure to obtain a same directory structure*, which is equivalent to a mirror directory structure, for storing documents.

Lee discloses:

- analyzing textual content and graphical content of a previously unclassified electronic document to determined a textual profile and a graphical profile of the electronic document (figure 11, col 2, lines 27-32; col 12, lines 35-40)

Lee does not disclose:

- generating a classification of the document based on the textual profile and the graphical profile

Jamali discloses:

- generating a classification of the document based on the textual profile and the graphical profile (abstract, col 2, lines 45-54: classifying documents based on the extracted attributes from the documents and comparing the extracted attributes with multiple classes of documents)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Jamali and Lee into Faisal for the following reason. Faisal discloses analyzing document contents to determine the categories of the documents and suggests storing in a directory the documents according to different categories for later use such as document retrieval in response to a query. The extracted attributes of documents used to compare documents in Jamali suggest that these attributes can comprise the text attributes and the graphical attributes, as included in the textual profile and the graphical profile resulted from analyzing a document as in Lee. The combination of Jamali and Lee into Faisal would enhance the document classification method by further utilizing the textual profile and the graphical profile of documents in

profile of documents in addition to the document categories to effectively perform the automatic classification for documents into the various directories and subdirectories.

Regarding claims 2, 3, 7, which are dependent on claim 1, Faisal does not disclose that a hierarchy of documents mirroring in a similar fashion an organization in the second directory structure representing a pre-existing memory storing documents.
Instead, Faisal discloses that the analyzed documents can be classified in a hierarchy of categories (figure 7 and col 13, lines 24-67) and thus suggests storing documents in such a hierarchy directory.
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have included said mirroring in Faisal since based on the directory of hierarchical categories, copying said directory can be performed, which was well known in the art, to obtain the same directory structure with the similar fashion.

Regarding claim 5, which is dependent on claim 1, Faisal does not disclose:

- determining a point set corresponding to the electronic document, wherein points of the point set correspond to points of lines
- determining a density of points within the point set
- classifying the multimedia document which includes text and graphic based on the feature of the media

Lee discloses:

- determining a point set corresponding to the electronic document, wherein points of the point set correspond to points of lines (figures 1, 4)
- determining a density of points within the point set (col 2, lines 27-28)
- classifying the multimedia document which includes text and graphic based on the feature of the media (figure 11; col 12, lines 36-37)

Lee does not disclose generating a document profile based, at least in part, on the density of points within the point set. Instead Lee discloses profiling each of the contour polygon in the text group and the graphics group (col 2, lines 31-33; col 12, lines 38-40). However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Lee to include generating a document profile based on the density of points within the point set since it was obvious that each contour polygon includes a plurality of points and the text portion and the graphical portion are different from each other based on the *number of points* contained in each portion, which is the density of points. Further, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Lee into Faisal for expanding the tool for classifying documents using text profile and image profile based on the document content in addition to the document categories.

Regarding claim 8, which is dependent on claim 1, Faisal, Jamali and Lee do not disclose building the pre-existing directory structure by extracting graphical and text features from documents in a directory-based memory to obtain a document classification profile of each subdirectory in the directory-based memory.

However, Faisal discloses the hierarchy of categories for classifying documents (figure 6, col 13, lines 24-67). Jamali and Lee disclose analyzing document content to determine a textual profile and a graphical profile and using these profiles to generate a classification for documents (as mentioned in claim 1 above).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Faisal, Lee and Jamali to include building the pre-existing directory structure by extracting graphical and text features from documents in a directory-based memory to obtain a document classification profile of each subdirectory in the directory-based memory because of the following reason. The categories and subcategories for classifying documents as in Faisal in conjunction with the text profile and graphic profile in Lee and Jamali suggests building said pre-existing directory structure since the creation of the subdirectories in different levels of directories is based on the various categories which may include text and graphic categories.

Independent claims 9 and 11 are for a machine-readable medium of the method of claims 1 and 5, and are rejected under the same rationale.

Regarding independent claim 13, Faisal discloses:

- analyzing contents of the documents within a pre-existing directory structure to determine a plurality of document classes (col 4, lines 1-25, col 14, lines 1-25

and figure 7: analyzing contents of the documents within a database to determine one or more categories for the documents)

- determining a document classification profile based on the plurality of document classes (col 4, lines 1-25: analyzing documents to provide a rich and comprehensive thematic profile and classification of the documents)
- generating a mirror directory structure based on the pre-existing document directory structure (based on the documents in the database, it was well known to copy the existing directory to generate a mirror directory; therefore, the hierarch of categories for classifying documents – in figure 7-- can be used as a model for an existing directory as well as a mirror directory via the copy feature)

Faisal does not disclose:

- receiving a previously unclassified electronic document
- analyzing content of the electronic document to determine a textual profile and a graphical profile of the electronic document
- classifying documents based on the textual profile and the graphical profile of the document
- placing the electronic document in the directory structure based on the document classification profile of the pre-existing document directory structure and the document classification to resemble the classification approach of the user

Lee discloses:

- analyzing content of the electronic document to determine a textual profile and a graphical profile of the electronic document (figure 11, col 2, lines 27-32; col 12, lines 35-40)
- receiving a previously unclassified electronic document (the fact that Lee analyzes the text and graphics of a document and generate a text profile and a graphical profile of the document inherently shows that said receiving is performed for analyzing)

Lee does not disclose:

- classifying documents based on the textual profile and the graphical profile of the documents
- placing the electronic document in the mirror directory structure based on the classification profile of the pre-existing document directory structure to resemble the classification approach of the user

Jamali discloses the document classification is based on the extracted attributes of a document (abstract, col 2, lines 45-54).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Jamali to include the text profile and the graphical profile since the attributes in Jamali can comprise the text attributes and the graphical attributes extracted from the document.

Also, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Faisal and Lee to include placing the electronic document in the mirror directory structure based on the classification profile of the pre-

existing document directory structure to resemble the classification approach of the user for the following reason. As mentioned above, Lee provides the text profile and the graphical profile via analyzing the document content. And it was well known to copy a pre-existing directory to obtain an identical directory, which is equivalent to a mirror directory, associated with the classified profiles of the pre-existing directory. Therefore, storing or placing an electronic document in the mirror directory can be performed based on the classified profiles as applied to the pre-existing directory.

Also, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Jamali and Lee into Faisal for the following reason. Faisal suggests storing the classified documents in the class hierarchy, where the class hierarchy is derived from the hierarchy of categories for classifying documents. Jamali provides comparing extracted attributes of documents to the multiple defined classes of documents where the extracted attributes can comprise the text attributes and the graphical attributes providing the advantage of to include said attributes for generating the text profile and the graphical profile as in Lee as well as to include said attributes for providing the categories for the documents.

Regarding claim 14, which is dependent on claim 13, Faisal discloses:

- generating a list of directories in the pre-existing document directory structure (figure 1, Document Repository 130; figure 7, #130)

- examining files in the directories of the pre-existing document directory structure (figure 7 and col 14, lines 1-25: Linguistic Engine examines the tags and the contents of the documents in #130)
- analyzing content of the documents within the pre-existing document directory structure (figure 7 and col 14, lines 1-25: analyzing the contents of the documents within the database)

Faisal does not disclose recursively descending the pre-existing document directory structure. However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Faisal to include recursively descending the pre-existing document directory structure since it was well known to sort a directory in descending order or ascending order.

Claim 15, which is dependent on claim 13, includes the added limitations of claim 3, and is rejected under the same rationale.

Regarding claim 16, which is dependent on claim 13, the same argument is applied as in claims 1 and 2 above. The pre-existing directory is organized in hierarchy, which shows the relationships among directories, and generating a mirror directory is carried out by copying the pre-existing directory where copying feature will carry all features of the pre-existing directory to a mirror directory.

Regarding claims 17 and 18, Faisal does not disclose:

- determining a primary directory and the secondary directory in the pre-existing document directory structure in which the document should be placed based on the document classification profile of the pre-existing document directory structure
- storing the document in a primary corresponding directory and storing the document in a secondary corresponding directory in the mirror directory structure that corresponds to the primary directory in the pre-existing document directory

Instead, Faisal discloses providing the hierarchy of categories via analyzing the document content for classifying documents (figure 6 and col 13, lines 24-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Faisal to determine a primary directory and the secondary directory in the pre-existing document directory structure in which the document should be placed based on the document classification profile of the pre-existing document directory structure for the following reason. The fact that Faisal provides the hierarchy of categories for classifying documents suggests determining the primary directory, which is equivalent the categories, and the secondary directory, which is equivalent to the subcategories, for placing documents due to analyzing the document contents.

In addition, placing documents in a directory is the same as storing documents in a directory and copying the primary directory and the secondary directory in a pre-existing directory would provide a mirror directory structure.

Claims 19-23 are for the computer-readable medium of the method claims 13-14, 16-18, and are rejected under the same rationale.

Claims 24-28 are for an apparatus of claims 13-14, 16-18, and are rejected under the same rationale.

10. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faisal in view of Lee and Jamali as applied to claim 1 above, and further in view of Morita et al. (US Pat No. 5,832,470, 11/3/98, filed 9/29/95).

Regarding claim 4, which is dependent on claim 1, Faisal, Lee and Jamali do not disclose:

- determining characteristic words of the document
- determining a frequency for each characteristic word
- building a frequency table based on the frequency associated with each characteristic word

Morita discloses:

- determining characteristic words of the document (figure 13, #1301-#1309; figure 16: keywords in documents)
- determining a frequency for each characteristic word (figure 15; col 11, line 58 to col 12, lines 1-7)

- building a frequency table based on the frequency associated with each characteristic word (figure 15, the frequency table based on the keyword in documents)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Morita into Lee, Jamali and Faisal since Morita discloses the frequency of keywords providing the advantage to facilitate the document classification as in Faisal, Lee and Jamali since the frequency of keywords helps fast extracting the topic of a documents.

Independent claim 10 is for a machine-readable medium of the method of claim 1, and is rejected under the same rationale.

11. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faisal, Lee and Jamila as applied to claims 1 and 9 above, and further in view of Tim Ho et al. (*Decision Combination in Multiple Classifier Systems*, IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 16, No. 1, January 1994).

Regarding claim 6, which is dependent on claim 1, Faisal, Lee and Jamali do not disclose that the generating of a classification of a document based on the textual and graphical properties comprises combining results from the textual and graphical analysis using a Borda Count.

Ho discloses the Borda Count Method in which the Borda Count is a generalization of the majority vote and the Borda Count for a class is the sum of the number of classes ranked below it by each classifier (page 68, part B).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Ho into Faisal, Lee and Jamali since Ho uses the Boda Count for a class *for summing* the number of classes ranked below it providing the advantage of applying the Boda Count for *combining results* from the textual and graphical analysis from Lee and Jamali.

Claim 12 is a machine-readable medium for the method claim 6, and is rejected under the same rationale.

12. Claims 29-30, 32 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Mahoney (US Pat No. 5,889,886, 3/30/99, filed 11/28/95) in view of Snow et al. (US Pat No. 6,185,550 B1, 2/6/01, filed 6/13/97).

Regarding independent claim 29 and dependent claim 30, Mahoney discloses:

- a document scanning device (figure 1A, #22)
- a document storage device coupled to the document scanning device, wherein the document storage device has a pre-existing document directory structure (figure 1B: scanner coupled to the memory where it was well known that a memory contains directories of data)

- a processor coupled to the document scanning device and to the document storage device, wherein the processor analyzes *the content* of documents scanned by the document scanning device to store the document in a memory (figure 1B; figure 1A and figure 2: the processor coupled to the scanner analyzes the content of text so that the text are divided into different groups)

Mahoney does not disclose that the storage device has a mirror directory structure organized based on the pre-existing document directory structure.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have included a mirror directory organized based on the pre-existing document directory structure in the storage device of Mahoney since generating a mirror directory is merely copying the pre-existing directory, which was well known in the art.

Mahoney also does not disclose determining a directory to store the scanned documents in the determined directory in the mirror document directory structure to resemble a user approach to placing documents.

Snow discloses storing documents once classified in a class hierarchy in a document directory (col 5, line 55 to col 6, line 17).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Snow to include storing classified documents in the mirror directory since by copying of the pre-existing directory, which includes classified documents, the documents will be stored in corresponding directory equivalent to the pre-existing directory. In other words, the copied directory is the mirrored directory.

Further, since the documents are classified in a class hierarchy, the documents stored in the document directory should follow the class hierarchy. In other words, the document directory must contain the primary directory and the secondary directory, which can be made a copy for a mirror directory with the same primary and secondary directory structure.

Also, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Snow into Mahoney since Snow discloses storing documents in a directory and suggests creating a mirror directory for classified documents, that has the same fashion of the existing directory, providing advantage to apply the storing feature and the mirror directory into Mahoney to place classified documents in an appropriate directory.

Regarding claim 32, Mahoney discloses that the document is analyzed based on image and textual content (col 1, lines 23-67; col 2, lines 1-6).

Response to Arguments

13. Applicant's arguments with respect to claims 1-30, 32 have been considered but are moot in view of the new ground(s) of rejection.

Applicants argue that Snow does not teach or suggest analyzing the content of documents previously placed in the directories of the document directory structure by the user (Remarks, page 16).

Examiner agrees.

Faisal discloses analyzing the content of documents within the directory structure to determine the document classes within the directory (col 4, lines 1-25; col 14, lines 1-25 and figure 7).

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Niwa et al. (US Pat No. 5,987,460, 11/16/99, filed 7/3/97).

Inaba et al. (US Pat No. 6,154,737, 11/28/00, filed 5/29/97).

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cong-Lac Huynh whose telephone number is 703-305-0432. The examiner can normally be reached on Mon-Fri (8:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Herndon can be reached on 703-308-5186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cong-Lac Huynh
Examiner
Art Unit 2178

Clh
2/19/04

STEPHEN S. HONG
PRIMARY EXAMINER